

-continued

Triethanolamine ethylene oxide adduct (30 mol)	0.03 parts by weight
Pure water	140.7 parts by weight

3. A positive type photosensitive image-forming material for use with an infrared laser according to claim 1, wherein the monomer (a-2) is at least one compound selected from N-(p-toluenesulfonyl)methacrylamide and N-(p-toluenesulfonyl)acrylamide.

4. A positive type photosensitive image-forming material for use with an infrared laser according to claim 1, wherein

TABLE 3

Planographic printing plates	Substrate	Coated photosensitive solution	Sensitivity (mJ/cm <sup>2</sup> )			Development latitude (mJ/cm <sup>2</sup> )	Development
			Developer 1	Developer 2	Latitude		
Example 7	C-1	C	1	170	170	0	
Example 8	C-2	C	2	180	190	10	
Example 9	C-3	C	3	180	200	20	
Example 10	C-4	C	4	180	180	0	
Comparative example 5	C-5	C	5	140	Poor development	—	
Comparative example 6	C-6	C	6	210	Poor development	—	

As is apparent from Table 3, the planographic printing plates C-1 to C-4 using a disulfone or sulfone compound are superior in development latitude to the planographic printing plates C-5 and C-6 of the comparative examples.

What is claimed is:

1. A positive type photosensitive image-forming material for use with an infrared laser, comprising:

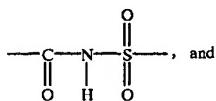
a substrate;

a layer (A) containing not less than 50% by weight of a copolymer which contains, as a copolymerization component, not less than 10% by mol of at least one of the following monomers (a-1) to (a-3):

(a-1) a monomer having in the molecule a sulfonamide group wherein at least one hydrogen atom is linked to a nitrogen atom,

(a-2) a monomer having in the molecule an active imino group represented by the following general formula (I):

(I)



(a-3) a monomer selected from acrylamide, methacrylamide, acrylate, methacrylate and hydroxystyrene, which respectively have a phenolic hydroxyl group; and

a layer (B) containing not less than 50% by weight of an aqueous alkali solution-soluble resin having a phenolic hydroxyl group, said layer (B) being laminated directly on said layer (A) formed on said substrate, wherein at least said layer (B) contains at least one compound which generates heat upon absorbing light.

2. A positive type photosensitive image-forming material for use with an infrared laser according to claim 1, wherein the monomer (a-1) is selected from low-molecular weight compounds having an acryloyl group, an allyl group or a vinyloxy group, and having a substituted or mono-substituted aminosulfonyl group or a substituted iminosulfonyl group.

25 the monomer (a-3) is at least one compound selected from N-(4-hydroxyphenyl)acrylamide, N-(4-hydroxyphenyl) methacrylamide, o-hydroxyphenyl acrylate, m-hydroxyphenyl acrylate, p-hydroxyphenyl acrylate, o-hydroxyphenyl methacrylate, m-hydroxyphenyl 30 methacrylate, p-hydroxyphenyl methacrylate, o-hydroxystyrene, m-hydroxystyrene and p-hydroxystyrene.

3. A positive type photosensitive image-forming material for use with an infrared laser according to claim 1, wherein a coated amount of said layer (A) is in the range from 0.5 to 4.0 g/m<sup>2</sup>.

35 6. A positive type photosensitive image-forming material for use with an infrared laser according to claim 1, wherein the copolymer contained in said layer (A) has a weight-average molecular weight of not less than 2000 and a number-average molecular weight of not less than 500.

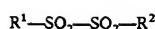
7. A positive type photosensitive image-forming material for use with an infrared laser according to claim 1, wherein a degree of molecular dispersion (weight-average molecular weight/number-average molecular weight) of the copolymer 40 contained in said layer (A) is from 1.1 to 10.

8. A positive type photosensitive image-forming material for use with an infrared laser according to claim 1, wherein a material, which is thermally decomposable and, in a non-decomposable state, is capable of substantially lowering 50 the solubility of the aqueous alkali-soluble polymer compound, is used in combination with the copolymer as the composition forming the layer (A).

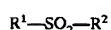
9. A positive type photosensitive image-forming material for use with an infrared laser according to claim 8, wherein the substance, which is thermally decomposable and, in the non-decomposable state, is capable of substantially lowering the solubility of the aqueous alkali-soluble polymer compound, is selected from onium salt, quinonediazide compound, aromatic sulfone compound and aromatic sulfonate compound.

10. A positive type photosensitive image-forming material for use with an infrared laser according to claim 8, wherein the substance, which is thermally decomposable and, in the non-decomposable state, is capable of substantially lowering 65 the solubility of the aqueous alkali-soluble polymer compound, contains at least one of compound a compound (II) or (III) represented by the following formula:

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(ID)



(11)

wherein R<sup>1</sup> and R<sup>2</sup> may be the same or different, and R<sup>1</sup> and R<sup>2</sup> each represent a substituted or non-substituted alkyl, alkenyl or aryl group.

11. A positive type photosensitive image-forming material for use with an infrared laser according to claim 1, wherein the resin contained in said layer (B) has a weight-average molecular weight of from 500 to 20000 and a number-average molecular weight of from 200 to 10000.

average molecular weight of from 200 to 10000.

12. A positive type photosensitive image-forming material for use with an infrared laser according to claim 1, wherein the compound which generates heat upon absorbing light contained in said layer (B) is selected from the group consisting of the pigments or the dyes. 15

13. A positive type photosensitive image-forming material for use with an infrared laser according to claim 1, wherein the aqueous alkali solution-soluble resin having a phenolic hydroxyl group contained in said layer (B) is selected from novolak resins such as phenol formaldehyde resin, m-cresol formaldehyde resin, p-cresol formaldehyde resin, m-/p-mixed cresol formaldehyde resin, and phenol/cresol (any of m-, p- or m-/p-mixed) mixed formaldehyde resin.

14. A positive type photosensitive image-forming material for use with an infrared laser according to claim 1, wherein said substrate is made of a polyester film or an aluminum plate.

**15.** A positive type photosensitive image-forming material for use with an infrared laser according to claim 1, wherein the compound which generates heat upon absorbing light has a light absorption region in the infrared region of 700 nm or more, and exhibits the ability to convert light to heat under light of a wavelength within this region.

**16.** A positive type photosensitive image-forming material for use with an infrared laser according to claim 1, wherein a light source to be used is one of a solid state laser and semiconductor. 35

**17.** A positive type photosensitive image-forming material for use with an infrared laser according to claim 1, wherein said layer (A) and said layer (B) are infrared sensitive. 40

**18.** A positive type photosensitive image-forming material for use with an infrared laser according to claim 1, wherein said material can be exposed to white light and thereafter remain useful as an image-forming material. 45

19. A positive type photosensitive image-forming material for use with an infrared laser, comprising:

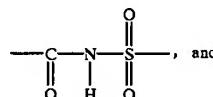
a substrate;

a layer (A) containing not less than 50% by weight of a copolymer which contains, as a copolymerization component, not less than 10% by mol of at least one of the following monomers (a-1) to (a-3):

(a-1) a monomer having in the molecule a sulfonamide group wherein at least one hydrogen atom is linked to a nitrogen atom,

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(a-2) a monomer having in the molecule an active imino group represented by the following general formula (I):



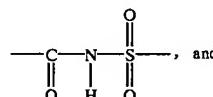
(a-3) a monomer selected from acrylamide, methacrylamide, acrylate, methacrylate and hydroxystyrene, which respectively have a phenolic hydroxyl group; and

a layer (B) containing not less than 50% by weight of an aqueous alkali solution-soluble resin having a phenolic hydroxyl group, said layer (B) being formed directly on said layer (A), wherein at least said layer (B) contains at least one compound which generates heat upon absorbing light.

**20.** A positive type photosensitive image-forming material for use with an infrared laser, comprising:

a substrate;  
a layer (A) containing not less than 50% by weight of a copolymer which contains, as a copolymerization component, not less than 10% by mol of at least one of the following monomers (a-1) to (a-3):

(a-1) a monomer having in the molecule a sulfonamide group wherein at least one hydrogen atom is linked to a nitrogen atom,  
 (a-2) a monomer having in the molecule an active imino group represented by the following general formula (I):



(a-3) a monomer selected from acrylamide, metbacrylamide, acrylate, methacrylate and hydroxystyrene, which respectively have a phenolic hydroxyl group; and

a layer (B) containing not less than 50% by weight of an aqueous alkali solution-soluble resin having a phenolic hydroxyl group, said layer (A) and said layer (B) being laminated on said substrate in that order, wherein at least said layer (B) contains at least one compound which generates heat upon absorbing light, and wherein said material can be exposed to white light and thereafter remain useful as an image-forming material.

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